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The Field Transportation Branch and Its Function:

as

Operations Staff of the Chief of Transportation

and

as Control Agency for Transportation of Men and Materials by Rail, Road, and Inland Waterways

MS # P-041s

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I. Origin and Organization of the Field Transportation Branch

All military transportation matters, the wide ramifications of which will be shown in other parts of this volume, were subordinate to the Fifth Division of Army General Staff. The very extensive peacetime work of this division, based on the experience of the old Railway Section of the former General Staff in the period before and during the First World War, could be carried on under the old form of organization, but soon after the beginning of the war the existing frame proved to be too narrow and no longer equal to the demands made upon it. Therefore, upon termination of the Polish campaign in 1939, the Fifth Division of the Army General Staff* was reorganized in accordance with the growing tasks, and in such a manner that the individual groups of the division were formed into indipendent branches combined under the Chief of Transportation. Thus the Field Transportation Branch originated from Group I of the Fifth Division and took charge of the broadened tasks of this group.

All following particulars, therefore, refer to the former Group I of the Fifth Division of Army General Staff before the above mentioned reorganization or to the Field Transportation Branch after that reorganization. To simplify matters the designation FIELD TRANSPORTATION BRANCH has been generally used. At the start of the war the Field Transportation Branch consisted of the following groups with the following peacetime strengths:

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*) From the time of mobilization the Chief of the Fifth Division was designated Army Chief of Transportation.

Group Ia	The Tactical Group, which handled troop transportation and consisted of two General Staff officers, one or two General Staff candidates, and two auxiliary officers.
Group Ib	The Supply Transportation Group, staffed with one General Staff officer, one General Staff candidate and one auxiliary officer.
Group Ic	The Roads and Inland Waterways Group, which later also handled furlough trains, with a staff of one General Staff officer, one General Staff candidate and one auxiliary officer.
Group Id	The Foreign Railways Group, with a staff of two officers, which later also handled training and the consolidation of experience gained.

This personnel was extraordinarily small in comparison to the scope of the work to be done, and to cope with that work the few officers exerted themselves to the utmost, often working at night. During the war a small increase in the number of personnel was necessary, especially in Group Ib, for reasons to be explained later.

The principle was adhered to that all really decisive work at all times must be done by a few officers only particularly because of security requirements.

In 1941 the post of FIRST GENERAL STAFF OFFICER was established within the Field Transportation Branch. This had become necessary in order to relieve the Branch Chief of some of his functions, as he was gradually assuming the position of a Deputy Chief of Transportation.

Attached to but not subordinate to the Field Transportation Branch, nor subordinate to the Chief of Transportation, was Group L, the National Defense Group* in the Ministry of Transportation. The Group consisted of one ministerial councillor, and two or three railway councillors and was responsible for the technical preparation of plans for railway shipments, which plans it put into effect by order of the Directorate General of the Reich Railways. It was also a useful liaison agency between the OKH and the Ministry of Transportation and often proved its value by successful representation of the demands of the former or latter. The greater the measure of mutual understanding for common interests, the number of personnel was necessary, especially in Group Ib, for reasons to be explained later.

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*) Referred to throughout this manuscript as the Defense Group.

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*) Referred to throughout this manuscript as the Defense Group.

Co-operation with the Defense Group, which had not always been easy in time of peace, improved immediately when the war began. The greater the military demands on the railway, the more readily were they accepted and carried out by the Group. In fact it was due to the activity of the Group that the resistance of many local railway authorities and of parts of the Ministry of Transportation to the demands of the OKH almost always were surmounted. In time a fruitful atmosphere of confidence developed between those responsible for transportation planning in the Transportation Branch on the one hand and the Defense Group on the other. With the help of the Group, all railway directorates and finally the Ministry of Transportation were brought to realize that it was necessary to cease opposing the mounting influence of the military on the whole transportation system and to surrender some measure of their former independence.

The question of the right of the military command agency to issue commands to the Ministry of Transportation, which right involved the subordination of the Defense Group to the military Chief of Transportation had been raised in the course of work in peacetime and was emphasized during the war. The problem became all the more urgent as military demands and simultaneously the resistance of the civilian traffic administration centers against those demands, increased. However, only the central authorities in charge of transportation, having an insight into both the military and the civilian sectors, are in a position accurately to comprehend and to control the total demands made on the transportation system and the capacity of that system. If the military command agency has absolute command authority over the whole traffic system the danger arises that through rigorous military demands and interference damage may be done to the machinery which ought to serve the whole State and which should not be only a part of a military command apparatus. Therefore, co-ordination of these two authorities seems better than subordination. Of decisive importance, however, is the choice of the persons who are to represent the military and civilian sectors. If the right persons are selected the claims of both sides can be satisfied without much friction. But it must be made clear from the outset that in case of non-agreement the military interests will prevail.

The influence of the military authorities on the transportation system increased steadily during the war. In many cases this predominance of the military demands over all others, as ordered by the Government, was necessary, but often it produced unnecessary friction.

II. The Field Transportation Branch as Operations Staff of the Chief of Transportation.

The tasks of the Field Transportation Branch as Operations Staff of the Chief of Transportation were of broad scope. This branch was the heart of the transportation system, enlivening its whole organism.

In the first place the Branch had a decisive influence on the development of all transportation matters. It was its mission to formulate the demands resulting from the plans of the OKH. These demands concerned the extension of the railway network, the capacity of stations, improvements in the railroad network, construction of new or strengthening of old railway bridges, enlargement or improvement of locomotive pools, building of new railway cars for transportation of new weapons, organization of railway personnel, and so on. In addition, it was responsible during the war for the organization of the traffic systems in occupied territories, for linking them to the German railway network, for protection of traffic on these railways, and so forth.

Before the start of the war demands entailed by the missions outlined above had to be pressed through against considerable resistance, sometimes even against resistance by military agencies. In cases of especially important and

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Before the start of the war demands entailed by the missions outlined above had to be pressed through against considerable resistance, sometimes even against resistance by military agencies. In cases of especially important and extensive demands it even became necessary to ask for decisions by the highest authority, Hitler. It was only on the basis of such a decision, for instance, that it was possible to put through the organization of the Railway Engineer Force, which later proved to be of vital importance and stood its test splendidly, and the serialized manufacture of specially constructed military locomotives.

It was then the duty of other sections to see to the technical execution and the handling of the details of requirements, but it nevertheless remained necessary for the Branch to insist emphatically upon the due fulfilment of detail requirements. Even when other military agencies were not affected, plans almost always were retarded by considerable obstruction arising partly through questions of expenditure and partly through the Ministry of Transportation itself, which was more adapted to civilian traffic. However, in most cases the necessary measures were carried through, though not always to the extent originally intended.

As an example the so-called Otto Program* may be cited. The concentration against Poland in 1939 and the subsequent movement of forces from the East to the western frontier had made particularly clear the inadequacy of the railway network and stations in Eastern Germany a circumstance that had been realized beforehand and viewed with concern. It became obvious that the railway network, which was based on only two main lines, Dirschau - Koenigsberg - Insterburg and Thorn - Allenstein - Loetzen, had to be increased by more lines of high capacity, new unloading facilities and cross lines. For this reason the Field Transportation Branch insisted upon ample improvements in tracks, stations, bridges, junctions, etc., consolidating all these requirements in the Otto Program. The already existing obstructions were increased through the difficulty of procuring the necessary men and materials during the war as these were also urgently needed by other claimants. The completion of the Otto Program was retarded considerably, and for various reasons not all parts of it could be adhered to. It was only after many conflicts that the program could be accomplished to a certain extent. The later "Barbarossa" concentration profited by the new improvements in the eastern railway network, although the program had not been completed by that time.

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*) Cf. Vol XVIII, Ch 1, P 23.

In addition to the railways, other branches of the transportation system had to be given advice and suggestions for improvements. The Branch applied itself vigorously to the extension and upkeep of the highway system, especially the construction of the autobahns. As demands on the transportation system increased it became evident that a large part of the military and war-industry transports had to be switched over to the highway system. Special care had to be taken, as in the case of the railways, to improve the inadequate roadnet in the East. Another "Otto Program" was drafted but proved even more difficult to fulfill than the railway program.

For the same reason, relief of the railway, the Field Transportation Branch was urgently interested in improving the inland waterways, a stepchild of the German transportation system. Though not suitable for large-scale troop transportation, the waterways were useful for mass transportation of goods whose movement was not of an urgent character, such as coal, grain, earth, and semifinished products for the war industry. The most essential tasks were the erection of new waterways and the improvement of existing ones, as well as the construction and maintenance of sufficient shipping space and the improvement of port installations at the important points.

It is worth mentioning that the Field Transportation Branch perforce was acutely interested in the state of the military and civil transportation systems of the neighboring states. Here, planning met with special difficulties, as there was no official interstate exchange of information on the subject. It was only with the highest Italian military transportation center that a loose contact was established shortly before the start of the war, but even this contact remained without practical results. The international train schedule conferences were the responsibility of the civil authorities and brought no results in the military field.

The above indications illustrate only a part of the activities of the Field Transportation Branch as Operations Staff. A detailed description of its work cannot be given within the framework of this report.

III. The Field Transportation Branch as Control Agency for Transportation Affairs

A. Group Ia

1. Working Methods

In addition to co-operation in the sphere of activity described above, the chief task of the Field Transportation Branch was to examine and process the plans and demands of the Army Command in the light of technical axioms of railroad operation. This was chiefly the responsibility of Group Ia, the tactical working group within the transportation system and consequently an important element of the OKH. A close examination of what influence the transportation system had on the war situation as a whole does not fall within the scope of this outline. The railway is still the only means for carrying out large concentrations and troop movements speedily. Whether other means of transportation will take its place within the foreseeable future cannot be judged at this juncture, but it seems unlikely. By reason of this key position, the railway is often the decisive factor in the conduct of field operations. If the railway system is in good condition and properly handled, the military command will enjoy freedom of action, if not, it will be severely hampered.

Even during peace a large volume of work fell to Group Ia, due to the fact that timely preparations had to be made for the defense of the country under all possible conditions in accordance with current developments in the political situation. These preparations resulted in the technical plans drawn up by the Transportation Branch for troop concentrations by rail. The unprotected frontiers of the German Reich made necessary the elaboration of a great number of defense concentration plans, providing for a great number of alternate centers of gravity and exploiting the advantages of the inner lines. This timely planning for troop concentrations to meet all emergencies was no special function peculiar to the German General Staff. It is and always has been the duty of responsible soldiers all over the world to run no risks in this respect.

Both in peace, and particularly so during war, all necessary investigations, wishes, and demands in connection with these troop movements were conveyed to the Transportation Branch through the Operations Branch, which was, so to speak, the employer of the Transportation Branch. In the course of these investigations Group Ia generally first prepared a preliminary draft outline indicating the best, and often the only, possible way to fulfill any specific demand. Sometimes this outline took the shape of a clearly arranged graphic sketch, the Transportation Outline. This plan was only worked out in detail after approval by the higher command centers and after issue of an appropriate order by the Operations Branch.

Once the outline had been approved by the Chief of Army General Staff or by the Operations Branch, the command authority and responsibility for the execution of the troop movement was transferred to the Field Transportation Branch.

In consequence of their overlapping functions, close collaboration and a constant exchange of ideas developed between the Field Transportation Branch and the Operations Branch.

A prior examination of the preliminary plan was not always mandatory. In many cases the Operations Branch ordered the carrying out of small transportation projects, that were not of a troop concentration type, without first examining the actual possibilities and possible effects on other movements. It was not easy to meet the demands of the Operations Branch in these cases, even though the necessity of such sudden orders was realized.

Co-operation between the Chief of Army General Staff and the Operations and Planning branches of the one hand and the Transportation Branch on the other cannot be too close. It need to be emphasized that all military operations are dependent upon the existing transportation facilities, especially in the case of a country with the geographical position of Germany. The capacity of the transportation system is the basis for planning new and carrying through existing operations, which makes co-operation of the two branches all the more important. That in this mutual work the Transportation Branch must accept the subordinate role of an assisting and serving partner should be driven home to all responsible military and civil agencies of the transportation system. The key position which the transportation system holds with regard to the whole conduct of war easily leads to the belief that it is an end in itself instead of merely serving as a means to an end. A view that cannot be strongly enough opposed.

On the other hand the military command must keep within the limitations of the transportation system, the capacity of which is rigidly fixed within certain inflexible boundaries that no amount of arguing can alter. The veto of the Chief of Transportation against any plan of the Operations Branch must be taken as final and not as a basis for compromise.

It must be stressed that co-operation between the Operations Branch and the Field Transportation Branch was always excellent. It sprang from mutual confidence and understanding and therefore provided a basis for successful work.

The second partner in the preparatory work for these transportation movements was the Organization Branch which furnished all the data that is so important for the detail planning of railway transportation. In each separate movement the units to be transported varied widely in composition and only the Organization Branch could furnish information as to their size and equipment, their place of embarkation and time requirements for completing preparations. This branch also made its demands on the transportation system. Numerous replacements had to be moved, units transferred, collective transports shifted, and so forth.

Co-operation with the Organization Branch was of a different character than that with the Operations Branch. It was at this point that the work of the transportation specialist commenced, the specialist who had to be thoroughly at home in the maze of Army organization and unafraid even of any over-organization.

Furthermore, the demands of the Army Chief Supply and Administration Officer* and of the Luftwaffe Chief Supply and Administration Officer had to be met. Thus, for instance, the Army Chief Supply Officer would ask for a certain number of trains in connection with each troop transportation movement in order to be able to move all required ammunition, fuel and other supplies to appropriate points in good time. The same applied to the Luftwaffe and, as could be expected in view of the nature of this branch of the Armed Forces, the demands of the Luftwaffe Chief Supply Officer were particularly insistent. The demands of the Luftwaffe were exceptionally high both in respect to timing and the number of trains required for the transfer of ground personnel and the extremely large volume of supplies involved. An additional difficulty in the beginning was the lack of a central Luftwaffe agency to represent these demands, so that numerous quarters had to be dealt with simultaneously. A central agency was only established later. This led to lengthy negotiations to find an adjustment, to reduce the demands of the agencies, and to adapt those demands to the existing facilities, a circumstance that adversely affected co-operation.

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*) For the sake of brevity referred to as Army Chief Supply Officer in this manuscript.

Another difficulty in co-operation with other branches arose through the stringent orders for secrecy. The right hand was not to know what the left hand did. However, the cards had to be laid on the table, at least in negotiations between the Operations and Transportation Branches, as otherwise co-operation for the common cause would have been impossible.

An experiment was made at the start to have the Field Transportation Branch work out only parts of a plan. The experiment failed, because efficient transportation planning was possible only if the full scope of requirements was known.

Within each individual branch there were only a few specific officers who were allowed to know the full scope of a project. Neither the other branches with which co-operation was necessary, with the exception of the Operations Branch, nor the other officers of the branch itself had any general idea as to the size and purpose of a project, although those officers had to co-operate as technical advisers. Many misunderstandings and delays resulted, which could only be surmounted with the aid of imagination and ingenuity. The above-mentioned items are some of the factors that had to be taken as a basis for the planning of the concentrations and large troop movements and they now will be dealt with in detail.

The most important factor in all plans for troop concentrations was the Reich railway network. This network had not been constructed from a military point of view, but had grown in step with the development of railway traffic. Taken as a whole, however, it was quite efficient. Especially disadvantageous were the numerous level crossings and the fact that otherwise separate lines converged at certain junctions. Although the German railway network was not based on central junction points to the same extent as the French railway system is based on Paris and the western Russian system on Moscow, the junctions at Berlin, Breslau, the Rhine bridges, and other places nevertheless seriously impeded simultaneous transportation movements. Furthermore, the capacities of the individual lines differed, so that some of them, including all narrow-gauge railways, were useless for military transport. These lines could only be used by the civilian sector.

According to experience gained during the war the German railway network and that of the neighboring countries proved adequate. But considerable shortcomings appeared which will be of greater importance in future owing to increased demands. Presuming that the means of conducting war will not change considerably, that is to say that in future troops and supplies will continue to be moved primarily by rail, an extension of the railway network in line with military requirements seems necessary. The construction of main lines of at least four tracks, without level crossings, similar to the Reich Autobahn, may be taken into consideration. They should run straight from north-south and east-west and connect the frontiers. High capacity loading and unloading stations with adequate adjoining terrain space should be developed along these lines. In times of peace these lines could be made available for fast train services, but in time of war they should be reserved for the military. A disadvantage is that the problem of effectively protecting such main lines against air attacks seems insoluble. In the long run centrally situated countries will not be able to do without such special lines, and countries having no land frontiers will need them for linking up large sea and air ports.

For the planning of concentrations all details on the capacity of lines and stations could be gathered from a carefully compiled railway atlas, which is one of the most important sources of information for transportation matters.

For troop concentrations through-lines of high capacity in north-south and west-east directions were needed. For this purpose and to make possible a flexible management of the railway as an instrument available to the High Command for the conduct of war, special "transporation routes" were selected from the railway network. Only those lines were taken into consideration as transportation routes which were so constructed that they could carry a heavy traffic load, both in respect to the number and speed of trains, touched each other either not at all or only at a few points, were free of bottlenecks, and had high capacity stations both along the route and in the vicinity of the frontiers. These lines had to be suitable interconnected to make possible the transfer of movements from one line to the other without difficulty or loss of time. Improvement of these lines was specially taken care of by the Field Transportation Branch. This network of military transportation lines was recorded on a transportation route map, with the separate lines marked in different colors. In transportation commands, the routes were cited as "red route or brown route", etc. In the course of the war the transportation lines were extended into the occupied territories, but on passing the frontier the capacities immediately diminished considerably. This was especially obvious in the case of the Russian railways, which by their wider gauge impeded a quick flow of traffic from the German railway network onto the Russian. By respiking the Russian rails to German gauge the situation was remedied, but in spite of the efficiency of the new railway troops, this respiking and repair work took much time. In the meantime transhipment was necessary, also resulting in a loss of time. In addition, the captured Russian railway material was insufficient.

Of special importance were the on-loading and off-loading areas. Not every transportation route had areas of sufficient capacity, especially at its terminals. Moving troops to and from these areas often took up much time which was lost for military activity and had to be taken into account by the command. This was one of the many points at which it became obvious how intimately the planning done by the command interlocked with the actually existing facilities of the transportation system.

Shortcomings of the German railway network had to be compensated for by emergency measures. For instance, separate movements were often mixed with each other or were split up into motorized and non-motorized elements and moved on two different transportation routes. Motorized units were off-loaded sooner, and non-motorized units only near the frontier, while units from areas near the frontier had to use road transportation. The movement of trains of empties before loading and after off-loading also had to be taken into consideration. The procurement and movement of empties was exclusively the task of the Defense Group within the Ministry of Transportation, which also attended independently to all technical details connected with transports. At no time during the war were difficulties encountered in obtaining the necessary empties even during the large troop concentrations. Only from 10 to 12 percent of the total number of empties were used for military purposes, this percentage being exceeded only in a few cases. Appropriate and economical use of empties is only guaranteed through foresight in arrangements by the transportation system, which necessitates an early knowledge of the intentions of the High Command and calls for co-operation of the Operations Branch and the Transportation Branch with the military and transportation agencies attached to the headquarters of the field forces. The Defense Group made full use of the Reich Railway in all planning work. Thus, the scheduling of trains for all movements of loaded and empty trains with due regard to civilian traffic, was left to the local railway stations, which in peacetime received the necessary data in the shape of TRANSPORTATION MANEUVER MISSIONS, transmitted through the Transport Commander Offices attached to the Reich Railway Directorates. These voluminous compilations contained only the details needed by the railway for drawing up the train schedules. For instance, a command was given to entrain Movement Bueffel on X-day in a certain area, to move the trains onto the RED transportation route at a certain point, and to direct it on this route at Tempo 48* to a certain off-loading area. For the loading and off-loading areas identification numbers were given, known only to the Transport Commander, who attended to this feature with his own personnel. During the war, transportation orders were given direct to the Transport Commander Offices, camouflaged in the same way.

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*) The number of trains per day, in this case 48 trains every 24 hours.

In compliance with the order to maintain secrecy, each transportation movement had its specific code name so that the contents of the trains were known only to a few officers in charge of preparations. The railway in particular and all its agencies knew only that it had to handle Movement Bueffel, whereas the contents of the trains remained unknown to them. This security measure proved satisfactory.

This code system was developed with increasing care during the war so that initiated persons could ascertain the tactical subordination of any unit within a large troop movement merely by the identification group from which the code name was selected. However, the constant juggling with code names, which necessitated the use of all manner of dictionaries and encyclopedial, gradually became so complicated that the final result was the opposite of what was intended, so that simpler methods had to be resumed.

Already in time of peace standard trains answering to the requirements of motorized or non-motorized units were introduced and turned out well. Their composition changed in the course of the war because of alterations in the strength of the units and changed or new epquipment, but the principle remained the same. Familiarity of the troops with the loading methods strongly influenced the transportation movements.

High demands on the Reich Reilway, such as the carrying through of a troop concentration, could not be dealt with in the framework of the ordinary train schedule, but necessitated the introduction of a maximum capacity schedule. This schedule restricted industrial and passenger traffic in order to make room for troop movements. The chief point, therefore, was to delay introduction of the maximum capacity schedule in each case until the last possible moment and to keep it in force for as short a time as possible, because every day or hour saved was important. For this reason the maximum capacity schedule was not kept up throughout the concentration, but was applied only during the days of heaviest transportation and for single lines, whereas the first and last transports were moved in the ordinary way.

Application of the schedule at the last possible moment was important not only on account of its consequences for the economy but also because it suddenly laid bare the military intentions. The concentration of a large number of empties, the movement of railway personnel, the throttling of industrial transports, and the subsequent large troop movements could not be camouflaged by the railway. Therefore the superior military agencies were as much interested in introducing the maximum capacity train schedule as late as possible as were industry and the Reich Railway. Developments in connection with this schedule during the war will be dealt with later.

Orders for transportation were given by Group Ia direct to the transport commander offices, some by telephone , some by teletype. For purposes of camouflage and simplification, specimen order forms (Befehlsmuster) were introduced. The most used forms were those for entraining preparations, for entraining and for departure. With the use of code names and camouflage numbers all necessary data were transmitted in these order formsby a few words and figures. Corresponding orders were issued by the Defense Group to the railway authorities and transmitted over the excellent railway teletype network, which, like the railway telephone network, was better organized than any other network of its kind. In urgent cases the Field Transportation Branch used these networks for transmitting orders to the Transport Commander Offices. Only some of the factors have been enumerated that played a part in preparing for troop concentrations and transportation movements. In the course of the work so many questions arise that are of no special interest within the scope of this report that experience and a thorough knowledge of all particulars are necessary to master the problems. Therefore it is imperative to select with special care the officers assigned to the Transportation Branch. Not only must they be above average in knowledge and ability, but they must attend to their jobs with devotion. Malcontents who regard their work for the transportation system as a punishment impede the flow of the work. As it is necessary to acquire considerable special knowledge and to develop routine, it has proved successful to leave the officers at their posts in the transportation service for a long period, where they also have an opportunity to become acquainted with the field agencies, the transport commander officers and so forth, before being transferred to the Transportation Branch of the OKH. But on account of the extraordinary exertions required of them it is urgently necessary to relieve them before they become tired and half-hearted or develop into ultra-specialists, losing all contact with the field forces. Through assignments at the front the general staff officer of the High Command during a long war must regain the impetus that he inevitably would lose in the daily routine of agencies lacking contact with life at the front. Only officers who are sound in body and mind and who not only feel themselves to be, but really are, one with the fighting forces as a result of personal practical experience in action, can live up to the high demands made on them during the numerous large troop concentrations.

These transportation movements will now be dealt with in detail, for which purpose the concentrations during the first years of the war, which were typical of the entire activity of the transportation system, will be described. Later events will only be treated briefly.

2. Concentrations and Major Transportation Movements

When the Polish campaign began, preparatory work for this concentration was completed. The demands of the Operations Branch for this part of the troop movements had been met by the beginning of the war. Difficulties only arose in connection with the concentration of the right wing of the Eastern Army because the railway network southeast of Breslau and in upper Silesia was inadequate. Areas with such limited facilities and which cannot be by-passed are a particular hindrance to large concentrations.

At the start of the war the TRANSPORTATION MANEUVER MISSIONS* were in possession of the transport commander offices, and each unit had an extract from the PRELIMINARY LOADING AND OFF-LOADING SUMMARY. As a result of the distribution of this summary the command agencies submitted numerous requests for changes. Some of these requests had to be met in part for tactical reasons, usually against resistance by the Transportation Branch. - These changes resulted automatically in alterations in the transportation maneuver missions, considerably delaying and complicating the work of all agencies concerned.

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*) Transport Uebungsaufgaben.

Simultaneously with the concentration in Poland the defense concentration for the West had to be carried out. In addition there were numerous replacement and mobilization transports to handle, as well as the conversion of the economy from a peace to a war basis and many additional hitherto unscheduled transports of the Army Chief Supply Officer and Luftwaffe Chief Supply Officer and other agencies. Within the areas of the transport commander offices a great number of local transports were carried out, which also were not included in the concentration plan. In spite of this heavy strain on the railway system, the concentration in September 1939 went off according to plan, thanks to the meticulous preparations and the splendid work of all railway authorities. As had been the case in 1914 the railway system proved fully equal to these extraordinary tasks. During this troop concentration the maximum capacity train schedule was introduced for only a few days and on only a few lines.

The concentration in September 1939 was generally moved at Tempo 36, that is to say 36 trains of a movement within 24 hours or one train every 40 minutes. Several movements were made simultaneously without difficulty at Tempo 48 or 60, in isolated cases even at Tempo 72, or one train every 20 minutes. To transport a division an average of 65 to 70 trains was necessary, a number that varied greatly during the war for various reasons. The average speed of troop movements was about 40 km. per hour.

The great test of the first actual execution of troop concentrations had been met. It must be considered a lucky circumstance that apart from minor incidents the movements were hampered neither by enemy air attacks nor by acts of sabotage nor by major traffic accidents. (Cf. Vol XVIII, Chapter II, Part IV, Item I)

Immediately after the occupation of Warsaw and while the campaign in Poland was still in progress, the first major forces were carried from the eastern front to the western front, to reinforce defenses there. This flow of troops from East to West increased steadily and reached its peak at the end of the campaign in Poland. At the beginning of this movement only small numbers of armored formations were moved, the bulk of these formations being transferred later to rehabilitation areas in the western part of Germany, using the ordinary train schedule. It was during this period that the former Fifth Branch of the Army General Staff was transformed into the agency known as Army Chief of Transportation, and that the Field Transportation Branch was established.

In consequence of the gradual flow of the army from the East to the West no real concentration had to be carried out when the campaign in France started in May 1940, as the bulk of the army was already stationed in the western part of the Reich. But in regrouping the army from its original defensive position into assembly for attack a considerable number of minor transports resulted, which were more difficult to handle than a major concentration.

Though the railway network on both sides of the Rhine is dense, the capacity of the individual lines varies greatly. An additional difficulty was the fact that the armored formations were to be moved into their assembly areas only shortly before the attack started, which necessitated a quick succession of transports for this purpose. Although in general the wheeled elements of the armored divisions proceeded by road and only the tracked elements were carried by rail, transportation could be accomplished only by introducing the maximum capacity schedule during the last days before the attack started and by raising the train sequence to a higher level than usual. Tempos 48 and 60 were no exception but rather the rule.

Minor difficulties arose during this concentration owing to the date set for the attack being changed twice at short notice. Formations already loaded had to be off-loaded, a few trains that had already departed had to be recalled, and empties had to be disposed of accordingly. Empties urgently needed for industry therefore remained blocked for a considerable time. But no delay or hampering of the troop concentration was caused by these circumstances.

No new experience of importance had been gained up to this time, nor had there been any surprises during the first concentrations. Minor cases of friction were smoothed over by improvisation. It was obvious that in the course of time the whole organization of the transportation system had become well integrated. Co-operation between the military and civilian agencies also showed less friction than at the start, as now all railway personnel from fireman to cabinet minister, fell in step with the pace required. Pride in their past achievements played a big part in bringing this about.

The wide experience gained in the sphere of troop concentrations was at once put into practice. For instance, accidents and interruptions of traffic had occurred repeatedly in the course of both concentrations, especially during the transfer of the armored formations from East to West. Either the armored cars were not fastened securely to the railway cars or they slid from the icy floors of the cars on curves in spite of good fastening. The success of large troop movements often depends on such minor details, and small causes can ruin the major plans of the command. By a new method of fastening, the selection of certain types of cars, and the appropriate training of the troops these shortcomings were remedied. Numerous other improvements were made, based on new experience, and a campaign was started against the increasing number of trains required by the individual formations. The only difficulty was to accustom the troops to space economizing and to induce them to restrict their requirements to essentials. Parallel to this campaign was the struggle against the steadily increasing demands by other claimants, such as the Army Chief Supply Officer, the Air Force etc.

The civilian traffic had been restricted only slightly during the previous concentrations, although part of some movements, for instance, had to pass the Berlin intersection by using the tracks of the municipal railway. The requirements of the war economy were also met.

The Franco Belgian railway network had been destroyed to a large degree by the Belgians and the French during the French campaign and although we started repair work immediately, the capacity of the network was only very slowly brought up to the desired minimum. The establishment of German transportation agencies in the occupied territories was also started at once and was completed before the railways had regained their old capacity. In connection with this organizational work the Field Transportation Branch was confronted again by new and extensive tasks. After the French campaign, transportation for the German-Italian attack in Africa and for the enterprise in Norway, as well as, preparations for the attack on England (Operation Seeloewe) and on Gibraltar were only sideshows. Yet these transports, although unimportant in size, caused considerable difficulties for Africa, because the railway connection with Italy was absolutely inadequate and overburdened with coal transports, for Norway, because co-operation with agencies of the Navy was not yet at its best and furthermore, because the hampering effects of the new organization of the OKW for the first time made themselves felt, for the attacks on England and on Gibraltar, because the Franco-Belgian railway network had not yet been repaired and because tiresome negotiations had to be conducted with agencies of the Navy.

It proved even more difficult to furnish the necessary shipping space for the Seeloewe Movement, and to concentrate the ships in the Belgian and Dutch ports. Serious inroads had to be made in the tannage of the inland waterways, which almost brought this branch of transportation to a standstill, so that it became necessary to fall back on the railways again for the mass transportation of staple goods. This had an immediate, adverse effect on the smooth flow of railway traffic.

Even before the armistice with France in July 1940 some formations of the Army had been transferred to the East to secure the frontier. During the last quarter of 1940 and early in 1941 the rate of this West-East movement gradually increased, requiring high accomplishments of all railway authorities. This concentration being for defensive purpose only, so that the armored formations remained in the West, there was no pressure regarding time, which meant that the movement could be made at low speed and without using the maximum capacity train schedule. Off-loading did not take place near the frontier but was spread over a large area, since the railway system was considerably burdened in supplying and provisioning the steadily growing Eastern Army and could not have managed a simultaneous mass concentration.

When orders for the BARBAROSSA concentration were given at about the beginning of May 1941, the number and speed of the transportation movements had to be increased without creating the appearance of preparations for an attack movement. This was accomplished by keeping the armored formations in the West and by moving the infantry formations in a steady flow but without haste to the Eastern frontier, where they were stationed in deep echelons near their off-loading areas.

The last part of this concentration, the transfer of the armored formations, was the most difficult part. The requirements of the Chief of Army General Staff and of the Operations Branch with regard to speed and localities for off-loading these divisions surpassed all previous demands. Several plans which taxed the capacity of the railways almost to the limit were rejected as they could not guarantee a surprise effect, and a further acceleration of the concentration was ordered. It was only by fullest exploitation of all possibilities and resources that the demands of the Operations Branch could again be met in almost all respects. This part of the concentration was prepared with minute care and discussed beforehand with the railway authorities in all details.

The progress of the movement of the armored formations later proved that this extraordinary performance was also within the bounds of possibility. According to plan the last phase of the Barbarossa concentration functioned like clockwork and without interruption from enemy raids.

But the plan was not carried through to its end. After the start of the first movements in April 1941 the attack on Yugoslavia was decided upon, and a situation resulted that had been envisaged frequently in war games and problems. This situation called for the diversion of a large body of troops to a new direction from a high-speed transportation movement already in motion, and in this case over a railway network of low capacity and unknown quality. But, as is so often the case, sudden demands and irrevocable facts in this case proved a better guarantee of success than careful preparations. The German and Hungarian railway authorities also mastered this task with the help of numerous improvizations. Many demands regarding the transportation of supplies and other traffic naturally could not be fulfilled, but the part of the Barbarossa movement chosen for the enterprise against Yugoslavia was carried into the foreseen areas in time and according to the plan of the Operations Branch without causing disorder among the formations that continued on their way to the Eastern front. (Cf. Vol XVIII, Ch Part IV, Item 3)

Barbarossa Concentration and the diversion of a part of it against Yugoslavia was the peak performance of the transportation system, because no concentrations of a like size were moved after that time.

Apart from the troop concentration for the Ardennes offensive in November and December 1944, carried out according to plan in spite of enemy air attacks and unobserved by the enemy, the main effort projects handled by the transportation system were the displacement of forces from one war theater to another, the transportation of new home formations to the front, and the rotation of units on various fronts. An important problem was the supply question, which will be dealt with later. The transportation requirements of industry and the supply services needed increased to an alarming proportion.

In spite of rising difficulties and notwithstanding enemy air attacks, military transportation requirements were met almost fully right up to the last day of the war, although delays sometimes occurred. Hampering difficulties were encountered in all fields, the chief of them being the slow flow of materials and coal, repairs to tracks, enemy action, and so forth. The steadily mounting difficulties of the transportation and the reasons for those difficulties are set forth in more detail in Vol XVIII Ch I Part IV Item 4. The situation could be met only by the introduction of improvements taught by experience. The maximum capacity train schedule was also discarded in the course of these improvements, as it hindered industry. This important change was brought about by equalizing the speeds of many kinds of trains and by maintaining certain standards of low or high speed, a measure which proved exceedingly efficacious.

The campaign to reduce the high number of trains used per unit also met with success owing to a new method of organizing units. The situation was relieved considerably by dividing divisions into combat echelons and rear echelons. Having been normalized meanwhile in respect to their organization and equipment, the division now only needed about forty-five trains each, twenty-five for the combat echelons and twenty for the rear echelons. This made it possible to transport the combat units of a division within a day, at the comparatively low speed of Tempo 24 in spite of the elimination of the maximum capacity train schedule.

In addition, preparations for announced transports were accelerated, and it now proved possible to complete all preparatory work so fast that a movement could be set in motion within six hours a time limit which the troops often could not meet.

The maze of numerous individual transports and small scale movements caused a larger volume of more painstaking work than had been necessary at the time of large troop concentrations and movements. The difficulties were increased by the necessity to keep track of each individual transport in order to be able to give any required information to the High Command which to an increasing degree wasted its time on trifles. This troublesome and exhausting kind of work was now the rule in the Field Transportation Branch.

Short distance transports burdened the railway in a measure entirely out of proportion to their importance, motorized formations sometimes having to be carried by rail over distances of fifty kilometers to save fuel and materials.

Tiresome as this petty work was, it nevertheless enabled the High Command to carry out all these troop transports which were necessary in the course of the war.

B. Group Ib

Group Ib was responsible for organizing and carrying out supply transports. According to instructions from the Army and Luftwaffe Chief Supply Officers and other organizations, such as the Reichs Labor Service (RAD) and the Organization Todt (OT), these transports were included in the troop movements during the first stages of the war. Although it was not always easy to meet wishes as to the number of trains and the times of which they were to be incorporated into the movements, a solution satisfactory to both parties was generally found.

The only real difficulties that arose, were due mostly to the fact that the military command authorities and the supply services each wanted their share of the transport to arrive at the head of the movement in order to have everything available on the spot as early as possible. The coordination of transportation for the above organizations with the troop movements was handled jointly by Groups Ia and Ib, the requisite transportation orders being passed on by Group Ib on special forms, as in the case of the orders for troop transportation.

In the course of the war and for the first time during the 1940 concentration in the West, the volume of supplies reached such proportions that the trains could no longer be incorporated into the troop movements. Special supply movements therefore had to be arranged, which were difficult to organize, because the places of departure of the individual trains were scattered all over the Reich.

The high rate of expenditure of equipment, ammunition, and fuel made it impossible to maintain an uninterrupted flow of supplies during action. Therefore, prior to each action, considerable reserves, ready for immediate movement, had to be made available to the Army and Luftwaffe Chief Supply Officers. Not only was a large amount of rolling stock thus withdrawn from traffic for some time, but there was the danger that railway yards, sidings and marshaling yards might become congested. Things were eventually smoothed out by rigorous organization and mutual concessions. The establishment of depot areas and a considerable increase in the number of sidings in the areas, which were chosen in localities that were unimportant to other traffic showed good results.

It has been mentioned that mass transportation of staple supplies for the Wehrmacht and for war industry was largely transferred to the inland waterways. The organization of the waterways was handled by Group Ic, the transportation itself by Group Ib. In the long run only the Danube was of importance, as its fleet consisted of a useful number of ships of all kinds. Rumanian oil was carried by this route, necessitating the building of tankers with carrying capacities of from 3000 to 4000 tons.

Navigation on the inland waterways had to cope with two special difficulties; these were:

(1) The conscription of boatmen for service in the Wehrmacht threatened to bring all navigation to a standstill. This danger could only be averted after long negotiations by the exemption of some of the men.

(2) A large part of the ships were not only concentrated for the Operation Seeloewe and consequently withdrawn from traffic for a considerable time, but were also converted specifically for use in that operation and could no longer serve their original purpose. In spite of all emergency measures that were taken immediately, inland waterway

navigation never quite recovered from this blow.

The number of user agencies with which Group Ib had to deal was particularly large. Though its chief employer was the Army Chief Supply Officer, many other military, semi-military and civilian agencies made demands upon this group. In addition several large industrial concerns working in the war industry and many individuals tried to establish direct contact. Co-operation with the Air Force and the Navy was secured by attacning a liaison officer from each of these Wehrmacht branches, attached to Group Ib. The demands made by these two Wehrmacht branches were often impossible to meet on account of their too great volume. Often their transportation-speed requirements had to be rejected as excessive. In almost every case a compromise had to be negotiated, which took up a large part of the day's work. As the war drew on the tasks of Group Ib and the numbers of its personnel increased. From 1943 on the movement of supplies accounted for the greater part of the volume of military transportation. In addition to normal supplies of all necessary fighting equipment, food, etc., for the forces in combat, stocks had to be brought forward for stockpiling in depots, fortresses and fortified places. In many cases supplies which had been brought forward under great difficulties had to be returned or transferred to some other locality.

Various kinds of scarce ammunition and other scarce goods made it necessary to introduce numerous special trains to deliver them to the front at the speed demanded by Army High Command and by the field forces. The train schedules, now of a uniform character as to speed, were seriously affected by these "Lightning," "Arrow," and other express trains.

The mania of the High Command for detail information on the whereabouts of each train, a mania due to that command's belief that from its distant headquarters it had to manage the movement of separate regiments or units to the front, led to the creation of a reporting office. Numerous officers worked day and night receiving and passing on reports as to the position of supply transports, which entailed a volume of work that could not have been handled without the excellent military and railway signal communication services. The "poor man's war" we were waging, in which even a train with special ammunition or a replacement transport of armored cars was a precious object which might decide events at the front, also cast its shadow upon the transportation system, especially in the field of supplies.

In spite of all efforts one problem remained unsolved until the last day of the war. This problem was: The development of a purposeful and sensible plan regulating the allocation of transportation.

Masked as supply goods, many goods were carried that had no connection whatever with the war and were only an unnecessary burden on the railways. The war economy could have saved much transportation space by application of a suitable system. Thus, for instance, many transports could have been diverted to the waterways. The measures introduced by the TRANSPORTATION DECENTRALIZATION AUTHORITY*, an organization established toward the end of the war, came too late, and it was no longer possible to prevent the unnecessary burdening of the railways. In future it will be imperative to take suitable measures in due time.

C. Group Ic

It has been mentioned that during the planning for concentrations at and before the beginning of the war it became obvious that the movement of motorized formations would have to be diverted from the rail system to the road-net in order to relieve the railways and that steps had to be taken to make possible the rapid movement of these formations on good roads from one frontier of the Reich to the other. This was the reason for the creation of through highways** which, avoiding detours and poor roads, led direct from East to West or North to South through the Reich. Thus, the basic idea underlying the development of railway through routes was now applied to the highway system. This plan was facilitated by the inclusion of the Reich Autobahns, the traffic capacity of which was practically unlimited, in the network of through highways, which were marked by large signboards. Maps of the through highways were issued to all troop units. A special service kept the roads in constant repair. Though troop transports on a large scale were not moved on these through highways the whole system proved to be of great value. Throughout the war a large volume of the supply and message transportation services was carried by these roads, so that the aim of relieving the railways was entirely reached. During the war the through highways were extended into the occupied territory.

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*) Dienststelle fuer Transportentflechtung. The literal translation would be "Agency for Transportation Unravelment".

**) Not to be confused with the "through routes" mentioned elsewhere in this study, which were rail routes.

For the execution of combined troop and supply transportation on the highways, command authority rested with Group Ic, which channeled its orders through the Wehrkreis* headquarters. These headquarters regulated the transports locally, supervised them, and reported about their progress to Group Ic. In order to have organs that could regulate and supervise the handling of all missions connected with the organization of the highways and waterways by local authorities, the posts of AUTHORIZED ROAD OFFICER and AUTHORIZED WATERWAYS OFFICER were created and these officers were attached to the staffs of the provincial prefects*.

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*) The basic military area in Germany, corresponding roughly to the pre-war Corps Area in USA.

Soon after the start of the war the work hitherto handled by Group Ic was transferred to the Planning Branch and Group Ic took charge of all home leave traffic. A network of home leave trains was spread all over the Reich and all theaters of war, organized splendidly in accordance with the importance of the task. The density of this network allowed each soldier in the field forces to take home leave twice annually. This technically sound solution soon failed, however, because the train space held available exceeded the number of soldiers on leave, which was due to the fact that the field forces could not spare the men. In consequence, the number of trains was reduced considerably.

D. Group Id

As previously mentioned, this group was severely handicapped by difficulties encountered in procuring information about the railways of neighboring states and other countries. Generally it was expected to give more information than it was able to give, despite the utmost zeal. The group was required to obtain information on the condition and capacity of the railway network in other states, together with details on artificial structures, railway personnel, and the organization of the entire transportation systems. Particulars as to the width and profiles of tunnels of foreign railways and the location of demolition chambers on the bridges could be of vital importance.

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*) Oberpraesidenten

When taking over the administration of the railways in occupied territories the records of Group Id proved most valuable. The group frequently suggested changes and improvements in the traffic systems in occupied territories.

The carefully collected information was compiled in large card index files and route atlases. Besides the neighboring states, other foreign countries were also included in these studies. The expert opinions on the capacities of foreign ports and feeder lines, which were required by the Field Transportation Branch, could be worked out on the basis of the data thus made available. This was of special importance in judging the possibilities of supplying Russia under the lend-lease agreement.

With the spread of the German influence over the neighboring states in the course of the war, this field of work lost its importance and was finally taken over by the Planning Branch. Group Xd now became responsible for the training of transportation personnel and the compilation and evaluation experience gained. Schools were established and training courses arranged and supervised and the experience of all branches of the transportation system made available to the troops and to all agencies. The primary aim of this work was to compile a new traffic regulation manual, but it was too late to accomplish this.

IV. Conclusion

It may sound arrogant after a lost war to single out for praise one cogwheel of the entire High Command machinery. Yet it must be emphasized that the Field Transportation Branch stood its test and accomplished all that could be accomplished. The tremendous difficulties under which work was done during the last years of the war must be taken into consideration. Successful work was done without relaxation to satisfy the high demands of the front and the High Command.

The fact that this was accomplished in spite of all difficulties is a source of gratification to all who took part in the work.